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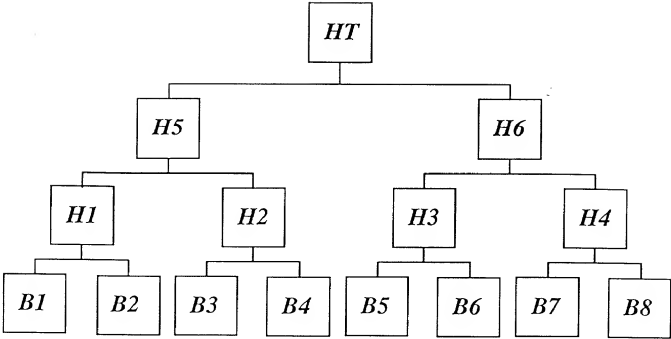


Fig. 1

Received Block	Compute	Hash Storage
B1	H(B1)	H(B1)
B2	H(B2), H1	H(B2), H1
B3	H(B3)	H1, H(B3)
B4	H(B4), H2, H5	H5
B5	H(B5)	H5, H(B5)
B6	H(B6), H3	H5, H3
B7	H(B7)	H5, H3, H(B7)
B8	H(B8), H4, H6	H5, H6
Sign(HT)	HT	Sign(HT)

Fig. 2

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Received Message	SC Compute	SC Verify	SC Hash Storage
Sign(HT)	-	-	HT
{B1, H(B2), H2, H6}	H(B1), H1, H5, HT	HT	H(B2), H2, H6
{B2}	H(B2)	H(B2)	H2, H6
{B3, H(B4)}	H(B3), H2	H2	H(B4), H6
{B4}	H(B4)	H(B4)	H6
{B5, H(B6), H4}	H(B5), H3, H6	H6	H(B6), H4
{B6}	H(B6)	H(B6)	H4
{B7, H(B8)}	H(B7), H6	H4	H(B8)
{B8}	H(B8)	H(B8)	-

Fig. 3

Method	Download		Update	
	Storage	Max Delay	Storage	Max Delay
CASCADE with hashes	$O(1)$	$O(1)$	$O(n)$	$O(1)$
CASCADE without hashes	$O(n)$	$O(n)$	$O(1)$	$O(n)$
Tree Authentication	$O(\log n)$	$O(n)$	$O(\log n)$	$O(\log n)$
DTA	$O(\log n)$	$O(1)$	$O(\log n)$	$O(\log n)$

Fig. 4

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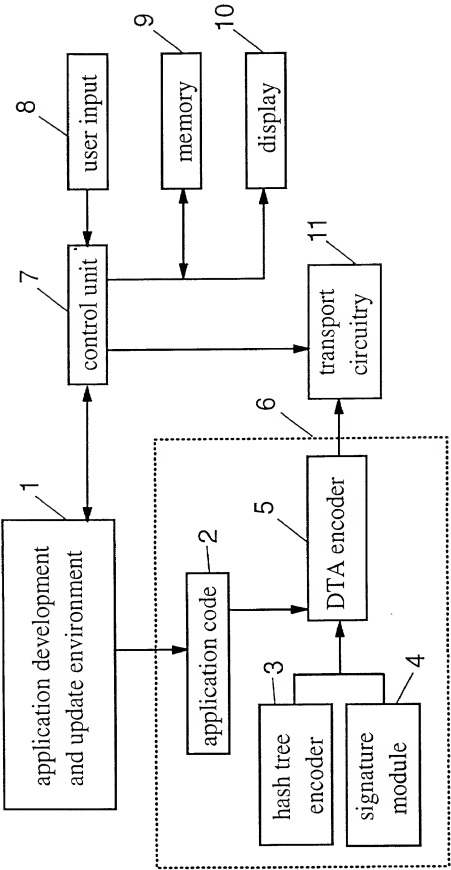


Fig. 5

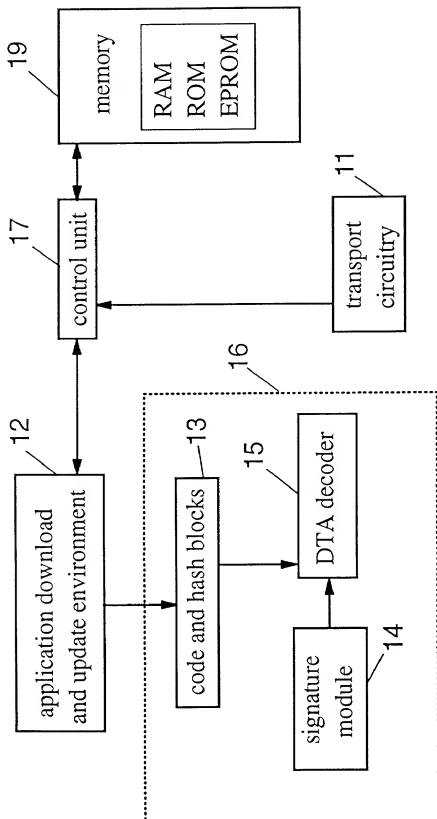


Fig. 6

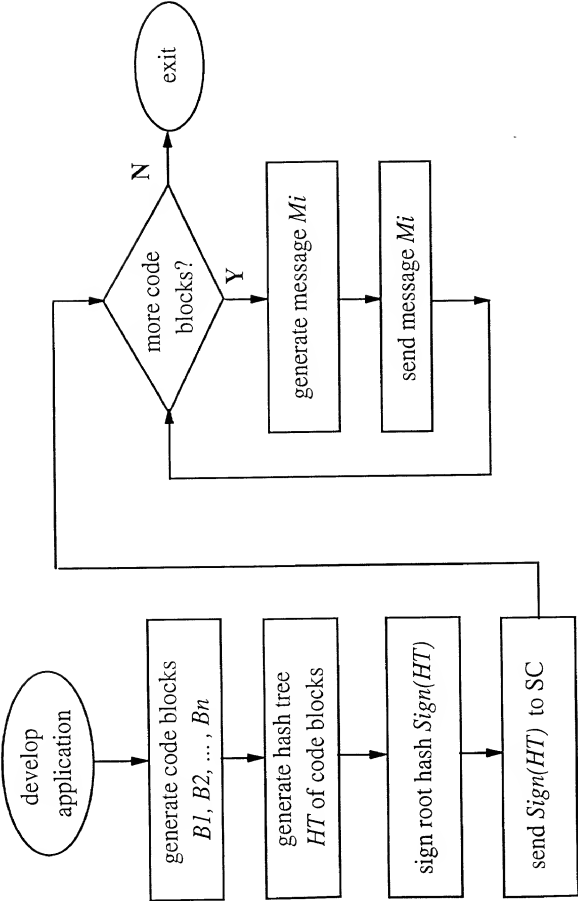


Fig. 7

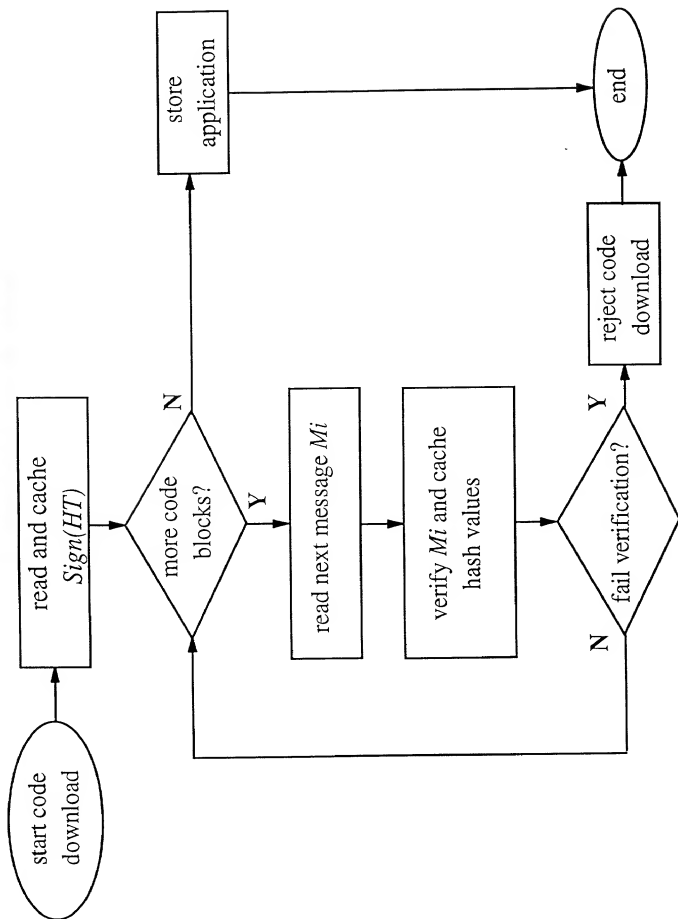


Fig. 8

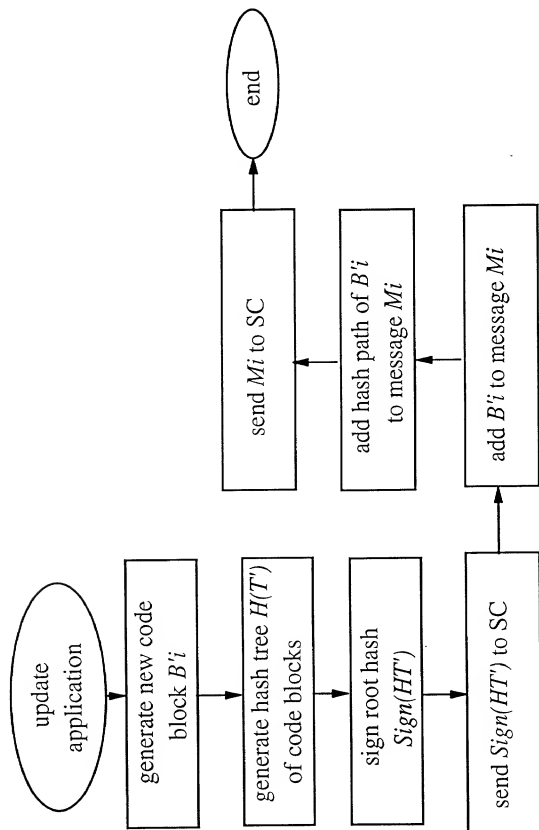


Fig. 9

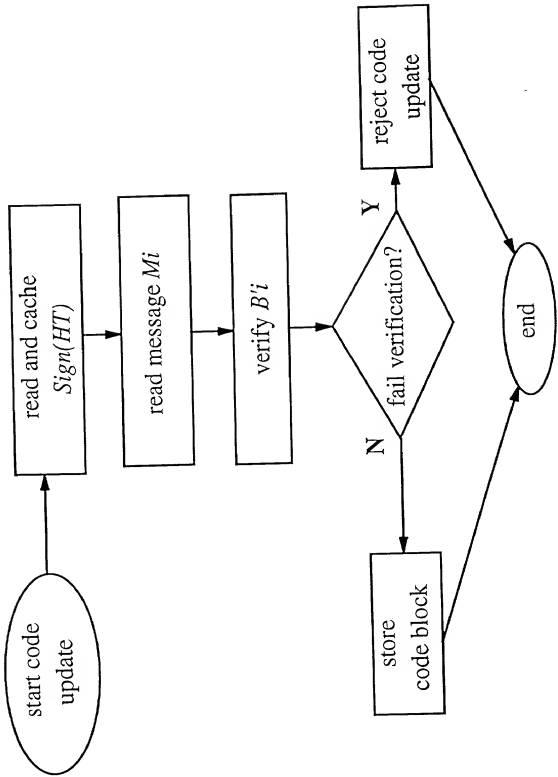


Fig. 10